Home internet-linked manufacturing workstations

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Purpose

To get everybody into the productivity loop while expanding their capabilities, in a useful, time and energy efficient way, that provides increased manufacturing productivity and education both skill-specific and general; all done efficiently from a new type of workstation utilized at home. Adequate energy, adequate human resources, and adequate communication and transportation, are as central to America as it is to civilization. As is adequate productiveness to match the needs of the nation and its place in the larger world economy. A project to simultaneously improve all these factors is proposed herein.

Background

As America is using 25% of the world's energy while producing only 3% of the world's energy, clearly energy is a key issue. Somehow, the two numbers need to be brought into equality. Many means for bringing wind and direct solar energy into the system have long been discussed elsewhere.

The existing trends of approaches to solutions are necessarily to be made with minimum change involved, such as merely upping the fuel efficiency of the average car; that is an achievable goal if it is the goal instead of business profits being the prime goal; I drove a car that would meet probably 80% of the average commuter and housewife transportation needs and got 42 miles per gallon when cruising at freeway speeds, roomy inside, safe and very easy to drive, it was built 19 years ago; a 1990 Honda Civic Hatchback, fully equipped. Surely that same vehicle could be being mass produced again today, if it had been built 19 years ago. But corporate egos, franchises and excessive profiteering is in the way of doing that; and clearly we cannot overcome that problem even now, even to help save the nation.

Yet, even doubling the average car's fuel efficiency, does not bridge the great gap in energy usage vs energy supply in the nation. And in fact, the vehicular efficiency is part of a national system that can provide for the adequate energy, human resources, communication, transportation and productiveness. Putting patches such as raising fuel efficiency standards for car manufacturers, is needed as soon as possible; yet, there really needs to be an eye toward what could actually adequately meet the goal requirements in a time frame enough to rescue the nation.

Human resources are also key to solutions. It is said that wasting a human life is a terrible waste indeed. For example, the huge majority of senior Americans, life after retirement could well be much less wasted, if some principles were enabled. Indeed, the enabling of efficient partial productivity could extend to many other categories of people, especially the folks who are unemployed between “regular” conventional jobs. But for now, let's focus on those senior folks who are "retired" and struggling to live adequately on Social Security retirement; thankful as they are on this provision for their present and future, maybe there can be more to life for them, beneficial to everyone while making them feel more useful and interested in life's activities.

Something of the "volunteer" quality to the activity, in that it involves voluntary participation doing things the person would like to do for the experience or for the sense of doing

something worthwhile. Working at one's own natural pace at the moment, for the reward of just doing it, as well as financial reward and other perks. Activities which have been designed to add a cheerful and fun quality to some extent; no ogres and slavemasters permitted here; life is to be made more fun and with a sense of being worthwhile for both the individual and the group, the nation, the world, civilization, the planet.

Perhaps as important, is the potential to make America again competitive in the international manufacturing system, which has now mostly gone offshore to other countries. We could again produce a significant amount of what we consume of manufactured products, and surely have some to sell to other countries in return for what they make over there and we buy over here. We Americans get back into the manufacturing game, as well as some other forms of human useful productive function currently not economical to be done here anymore.

Thinking of the American view, of the country; and disregarding for this abstraction, the plethora of franchises, territories, and domains virtual, real or implied that will need to be consulted before real implementations.

Key to the solution is the vision of the whole picture; and the endless questions of does a proposed change get us closer to the goal or not, and what does it do to the myriad other factors in the overall picture. Some potential approaches would have a more interesting appearance if the whole picture is referenced.

The integrated Home Workstation Approach

Consider the concept of home-sited manufacturing & educational workstations, linked through the internet, unified by corporate or small business management; including delivery services' shuffling of subassembly kanbans between homes. Those home workstations being also set up to be on the job training workstations, including providing practice in between real job productivity items done there too.

Such an approach is that of bringing into reality a whole new technique for getting things done efficiently in terms of energy, time, and human resources for a new category of national productiveness, by creation of an economy stimulation through creating a nationwide at-home manufacturing workstation system. The use of parts & subassebly transfer between various home-sited workstations could be largely done by use of the "kanban" or box technique (referring to the “Just In Time” produce-on-sales-requests technique of the 1980's) subassembly and internet-coordinated and in some case partially teleoperated equipment for various kinds of manufacturing steps done at home, coordinated by small and large business management which is in turn managed by reference to the entire needs of the nation.

Initial goal would be for part time work at home with these home workstations. They could be used a few hours after a regular 9-5 job workday, instead of commuting to a second job to make ends meet. Yet they would have the ability to provide full time employment where appropriate.

The home workstations could be part time work for the unemployed, doing make-work that builds up their skills for when real work becomes available. They would be used for retired people, to get them back in the work force, at their skill level; this could boost their self esteem as they continue to contribute to the GNP even after retirement, when no full time job is practical for them. Aptitudes, rather than prior employment, would be the determiner for who does what on these home workstations. Those people who are unemployed by conventional businesses or corporations would no longer have to merely wait until somebody wanted to hire them for awhile; they could be in the productivity loop immediately upon loss of formal employment, no longer totally at the mercy of the whims of corporate business needs.

Testing of aptitudes, much like the on the job training from the home workstations, would be done at home too.

Continued monitoring of quality and quantity of work from each workstation and person over time would provide additional data for potential for further jobs they could do, including change or upgrade to the particular type of fabrication or testing workstation.

These home workstation's design and fabrication would provide new business opportunities too. They could be of many kinds and be designed for modular add-ons for adding versatility; each would include common computer workstation functions much like already exist, as linked through the high speed internet, along with small scale tooling for manufacturing subassembly steps, some of which could be done teleoperated from elsewhere in some steps such as micro-assembly parts, analogous to electronic "pick-and-place" assembly of tiny surface mount parts on circuit boards common for decades. drill presses and similar small scale machine tools would be part of the workstations, as well as precision measuring equipment, especially suited for the home workstations primarily involved in quality control.

Instead of the commuter intensive transportation system we now have, this would then change to a delivery-intensive transportation system. The movement of the "kanbans" or packages of subassemblies between the various home workstations would become the domain of the delivery service providers; initially this could be the existing carriers such as the US postal service, UPS, Fed-Ex etc, as well as more local enterprising delivery such as by teenagers with small delivery trucks working within a smaller neighborhood subset. The tracking of location and movement of these "kanban" packages would be a prime function, possibly utilizing GPS tracking systems.

Existing types of video-chat systems can provide much of the face-to-face type interactions as needed between management and employees. Existing homes often have rudimentary computer, much less versatile, workstations for internet and game use with computers via the internet; such sites would be useful for addition with the workstation locations. The same combination of computer and manufacturing equipment of the workstations would also be adapted to on-the-job training and generalized home education, expanding the capabilities of the employees right at their workstations. The more versatile the workstations, the greater the potential for performing a wider range of kinds of processes as becomes needed by the national productivity's evolving need set.

Referencing the common terms "telecommuting to work" and "home business" perhaps these concepts could be expanded intelligently. People would perform some tasks at home that might otherwise be done in some business or manufacturing physical site. Computers and the internet have potential to link it all together on the informational level and the managerial level. Where there is physical product involved, the USPS, UPS, Fedex type services could pickup and deliver between homes and distant destinations; and among local neighborhoods, some people could shuffle containers of subassemblies between homes in a certain area which coordinate to build a specific product. A system like the old Japanese Kanban system of a container which carries a partially completed product, along with a checklist of what needs to be done to produce the completed product, moves from station to station until it is finished and tested. Each station receives a Kanban, removes the partially finished product from it, reads the instructions, adds parts to the device as is defined by the parts on hand from separate source, using the person's skill and tooling on hand. Then the Kanban is then moved to the next station for the next step in assembly; at times, a station does not add to the assembly but instead applies quality control measurements and testing to verify it is up to spec so far. Eventually the Kanban reaches the end of the stations on its checklist, after final inspection, and gets boxed for shipment for use by a customer.

In the system being envisioned, however, the Kanbans are moved from home to home, instead of workstations in a large manufacturing facility. A lot more time and energy is

involved in the processes of shipping from home to home; this is less efficient. However, looking at the overall picture, energy efficiency is improved by the employees not needing to commute back and forth to a common manufacturing facility; and the resources that would have been consumed by the manufacturing facility are saved, in the big picture. But from that savings consider the reduction in efficiency required by usage of home space for the process, perhaps involving construction of an added room, instead of using a room vacated by departing children as they grew up. Specialized tooling such as computers and microscopes and drill presses might need to be acquired for the particular kind of steps that are done at that home facility.

More inspection time would be needed, sometimes repetitious, which reduces efficiency. So, lots of plus and minus for the evaluation of this concept. The big plus is that people who would not have otherwise have been in the productivity loop, are back in it again, even though at a lower productivity rate. One-quarter of one-time level of full productivity is a lot more than no productivity, for example.

A goal of the system would be to get everybody into the productivity loop, doing one or more functions, and being compensated for doing that function. At first, whoever is making this all happen, is likely to create tasks of the nature of "digging holes and filling them up again" to do, such as picking up trash from the street and putting in garbage cans, or taking some gadget apart while somebody else puts them back together again, just to get the feel of doing it all in a coordinated fashion. Eventually slip in some paying item for assembly or disassembly; like shifting from taking apart wrecking yard car alternators or engines piece by piece and putting them back together again along an assembly line among many homes, to the assembly and inspection of new engines, for example. Practice makes perfect and the experience is what counts at this point; in the KanBan system, each workstation (each home facility in the proposed scenario) includes ability to set up and use several kinds of tooling; and daily activity involves learning even more new kinds of knowledge and acquiring new skills as part of the daily routine.

People could become known, via their practice and performance, for their ability to make clean 3 mm holes drilled in 0.5 cm steel plate; or the programming of a small benchtop assembly robot to do a microscopic subassembly of a certain form.

Result is first to have people, all people, find a new level of usefulness in their life, whether a teenager looking for a first job; to a housewife with 15 minutes available off and on in her daily routine; to a retired senior who still has a lot of mileage left, just not at full speed, yet still can get there. "Homeless" people could be brought into the loop, with tasks found to be at their level for their self-esteem and a bit of productivity in it all somewhere. Not wasting all those partial human lives is a national reward as well as to the individuals; and the country may once again be able to produce some products at low enough overall cost here at home.

Educational expansion aspects of the proposed project

Re education, I would suggest very intense looking into the use of the internet and television for educational purposes, since the classroom setting is not necessarily the optimum educational medium for all subject material; we learn quite well by example's set before us.

For an obvious example, programming of televised educational shows could be like Sesame Street for adults too; imagine enjoying learning calculus that way. And the interactive potentials of the internet and web browser technology has enormous potential for designing online course material where problems are shown, ways to solve the problem are shown, then problems are shown to the student and the student's answers evaluated online as to adequacy and where necessary new problems and their solutions are put before the student until the student gets it right, every time. Learning course material could then make every student an "A+" student; some will learn faster than others, but then there will be no missing

pieces as in a "C" grade education.

However, the computer screen display still has some quirks that need to be resolved or bypassed in such education; the well-known differences between paper versus computer screen, even the LCD screens. Artists still have to make an initial artwork on paper, then use the computer to create it digitally; somehow it does not work well when trying to do creative art directly onscreen, ask the artists. And similarly for "left brain rational" data input, the on screen display still has a problem needing analysis and resolution, which I, as an excellent speller from childhood, puzzle over, a demonstrable and repeatable phenomenon that I can compose and write online and go back and correct my spelling - if unassisted by the spellcheck, of course - and the paper will look spelled correctly to me; but if I then print it out onto paper, and look at it, almost invariably my eyes will spot more spelling errors almost instantly, ones I could not perceive when it was on screen. Research into these two phenomena, the art one and the spelling improvement one currently needing doing on paper, would need to be completely understood and resolved first. Using the normal spell-checker on the computer only compensates for the problem, it does not fulfill understanding nor truly solve the problem, which probably has more far-reaching effects that are critically important, too, before education can be fully reliable via the computer screen.

There is also much need for far more versatile input devices to the computerized educational system than just the keyboard and mouse, powerful as those widespread input devices are. Possibly computer game type controls might need to be integrated into such educational systems using the internet. In some course material, three dimensional viewing may be needed; so adaptations for that need to be developed for education, such as wearing alternate-side-switched glasses driven by the computer which is alternately showing the view from the two stereo sight positions, so to the mind there is 3 D in motion.

Such increased remote educational capacity would directly integrate with the home manufacturing workstations, utilizing the expanded computer-machine interface to people. The above-mentioned input and output versatile systems (and eventually developing full-body-sensing computer input devices) thus created for educational systems online, could be adapted also for performing telecommuting activities via the internet from home, directing machines to do the required actions to build and test and repair products, as if the operator of the tools were actually on site in the factory. This would have advantages of greatly reducing the fuel consumption to commute to the job each day, but also eliminate the commute time; and would also enable scale conversions such that a person could be observing what appears to be easily handled items being worked upon, when in reality the machines are actually manipulating microscopic devices; or visa versa very large items, with the person operating the equipment from the comfort of home, not focused on it being tiny or huge, but of just easy handled size to the senses.

While we skirt the complacency of "business as usual" failed policies of the recent era, since corporations do not take on the responsibility for providing jobs for the workforce; they are there just to produce in their specialized arena as efficiently and profitably as possible, and care not at all for the big picture in which they exist. To get past these ways, we will need to find a comfortable eyes-wide-open level of monitoring the results of our changes to the systems, intelligently and compassionately resolving the unexpected interaction issues as they are first spotted as we go along. And life could become lots more interesting as a result of all this, too, as people drift out of the couch potato zonked in front of TV sports munching MSG-laced fast food mode, into far more enjoyable forms of living consciously and actively healthily.

Intended Results

This concept has potential to bring back competitive manufacturing to the United States,

through massively boosting productivity and skill expansion, by enabling part time work at home to match the abilities of all classes of people including retired seniors and young people looking for their first formal jobs; changing the transportation system needs drastically through elimination of much of the automotive commute system, and being more time and energy efficient due to the elimination of the daily commute to a worksite.

Reference Background material

http://kestsgeojedc.blogspot.com/2009_01_01_archive.html
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